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Title of Invention: Foldable Book Holder

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**DESCRIPTION**

This application claims priority from U.S. Provisional Application Serial No. 60/458,052, filed on March 25, 2003, entitled "Foldable Book Holder," the disclosure of which is incorporated herein by this reference.

**BACKGROUND OF THE INVENTION**

**Field of the Invention**

The present invention relates generally to book stands, and more specifically to foldable book stands. The preferred embodiment more particularly relates to a foldable book stand, or book holder, with a shelf member and a pair of vertical support members that fold flush and 'snap' with the main body of the book stand and/or with the shelf, allowing the invention to be used not only as a book stand, but also as a writing board, sketch pad, straight edge, or clipboard. In its folded configuration, the invented book stand is compact in size so that it can be easily stored in a binder, brief case, back-pack, or other storage unit.

**Related Art**

It is well known that most readers place their reading material on a flat surface directly below their line of sight for ease of reading. At this angle, the reader is required to look downward for a prolonged amount of time, possibly causing eyestrain and/or discomfort in the neck. If the reader attempts to hold the reading material they will most likely suffer from additional fatigue in their hands and arms, furthermore hindering their ability to write and type.

As most people are aware there is a long-standing need for such a device as to be able to support a book or magazine at a comfortable reading level, be readily manufactured from inexpensive materials, and be transported easily by a wide variety of users (i.e. students, teachers, typists, and musicians).

5           There are numerous devices and methods employed in the prior art for the support of reading material. Even though many of these devices are designed for students and teachers and are intended to be lightweight and relatively foldable, most are too large and unmanageable for satisfactory storage and others require numerous steps to assemble. Some of these devices are complex arrangements that require excessive machining and are quite  
10 expensive to manufacture.

          The present invention is lightweight, compact, aesthetically pleasing in its appearance, and more readily stored in a ring binder or folder than practically all the devices of the prior art. The preferred embodiments of the present invention may be set-up for use and folded for storage with a minimum of motions. The folded book stand may remain in a solid panel  
15 configuration of less than 3/16" thick to function favorably as a clipboard, March 25, 2004sketchpad, or straight edge. In addition, the required components are few and simple to manufacture, easily fabricated from inexpensive materials, and can effectively support the weight of heavy books at a comfortable reading level. Some devices of the prior art that fold closed are not well-suited for use as a clipboard or sketchpad, and require excessive  
20 components, such as US Pat. No 5,941,496.

          The preferred embodiments of the present invention include features such as a shelf member and a pair of vertical support members that preferably fold flush with the main body of the book stand. The advantage of a shelf member is its capacity to support a wide variety of books and magazines and also retain pages in a consistent position. Most devices of the prior  
25 art, such as U.S. Patent No. 5,029,798, that include shelf elements are disadvantageous in the fact that they require numerous steps to assemble or are either too wide and/or too thick for satisfactory storage in a ring binder or folder.

          Numerous devices of the prior art are not well-suited for additional adaptations such as a reading light, a book magnification device, clip, or other visual aid devices. The few devices  
30 that are adapted for such an apparatus are too bulky for transport. Three representative book stands that have been suggested in the art are those disclosed in US Pat. No. 5,016,852, US Pat. No. 5,456,440, and US Pat. No. 5,660,117.

## SUMMARY OF INVENTION

The present invention is a book stand for holding books, magazines, drawing pads, loose paper, or other objects for viewing at a non-horizontal position. Preferably, the book stand includes a generally rectangular panel with a plurality of support members attached to a rear surface and a shelf attached to a front surface. Preferably, the rectangular panel is about the size of an 8 ½"x11" piece of paper for easy storage in a binder, folder, backpack, or other storage unit. The preferred rectangular panel is not hinged, folded, or creased along its main body, therefore preventing it from easily bending or collapsing. The support members may be adapted to diverge from each other at their lower ends and at their rearward edges, creating a very stable support system.

The preferred rear surface of the rectangular panel has recesses of similar dimensions as the support members, for receiving the support members, and the shelf member may pivot to be coplanar with the panel. Preferably, when the support members are in the folded position, they 'snap' into the recesses or enter into some frictional engagement with the panel and /or shelf, preventing the support members from pivoting out of the recesses unless a user manually pivots the support members out of the recesses. Thus, the book stand may be adapted so that, when folded into a storage position, the support members, shelf, and panel are retained together and/or tend to stay together in a single flat unit, with both front and rear surfaces flat and parallel.

Preferably, the two support members pivot away from the midline into their set-up positions that are generally perpendicular to the rectangular surface, or more preferably, each slanting outward in the range of 90-120° to the rectangular panel. The preferred support members each have a hinge preferably angled about 5-25° from the outer edge of the rectangular panel. The preferred angle of the support members to the rectangular panel and the preferred hinge angle result in the support members being wide spread under the rectangular panel and, yet, still substantially vertical when the stand rests on a horizontal surface.

The preferred shelf is attached to or extends integrally from the bottom edge of the rectangular panel. Preferably, the shelf is the same length as the rectangular panel. Also, the shelf preferably pivots at a hinge towards the rectangular panel to a position generally perpendicular to the rectangular panel. Preferably, the shelf is supported on portions of the support members that extend forward and up. Preferably, tabs on the support members 'snap' into grooves or apertures in the shelf, holding the support members in the desired operative position.

An especially preferred embodiment has holes in the shelf and support members at distances suitable for placement of the book stand in a three or two ring binder. Also, the shelf may be contoured, so that when the book stand is in a ringed binder, it does not abut against the ring latches.

Therefore, the foldable book stand is easily kept in a folded position for easy storage in a binder, folder, backpack, or other storage unit. The simplicity of the design allows for easy manipulation of the parts into operative position. The angle and spacing of support members provides the greatest stability for holding a wide range of objects.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a view in perspective of one embodiment of the invented book holder showing the shelf member in its operative configuration.

Figure 2 is a rear view of the book holder of Figure 1 showing two foldable support panels in an operative orientation.

Figure 3 is a perspective view of the book holder of Figures 1 and 2, wherein the two support members are shown being pivoted either into an operative configuration (wherein the front portions of the support members are being pivoted inward) or into a closed configuration (wherein the front portions of the support members are being pivoted outward).

Figure 4 is a view of the partially set-up book holder of Figures 1-3, wherein the shelf member is shown in a hyper-extended position

Figure 5 is a perspective view of the book holder of Figures 1-4 in its folded configuration.

Figure 6 is a front view of the book holder of Figures 1-5 in its folded configuration.

Figure 7 is a rear view of the book holder of Figures 1-6 in its folded configuration.

Figure 8 is a side plan view of the book holder of Figures 1-7 in its operative configuration.

Figure 9 is a perspective view of the book holder of Figures 1-8 supporting a transparent cover and book.

Figure 10 is a front view of an alternative embodiment, wherein a clip is inserted in the main body of the book holder.

Figure 11 is a rear view of the embodiment of Figures 1-9, showing to best advantage an especially preferred embodiment of the support member configuration..

Figure 12 is a partial rear perspective view of the especially preferred embodiment of Figure 11.

#### DETAILED DESCRIPTION OF THE INVENTION

Referring to the Figures, there are shown some, but not the only, embodiments of the present invention, which is referred to herein as a foldable book stand or book holder. The term "book" herein may include any type of a hard or soft cover book, magazine, binder, folder, loose paper, or other objects for viewing at a non-horizontal position.

In Figure 1, a book stand **100** is shown in operational configuration, adapted to support a book at an inclined angle. Preferably, the book stand **100** is made of a lightweight, thin, rigid plastic, or other less preferred materials, such as aluminum, cardboard, particle board or other lightweight materials. In its preferred embodiment, the book stand **100** is comprised of two support members, three hinges, and two rectangular panels. Other embodiments may be adapted with additional components for various purposes.

The back of a book **15** is supported by a large rectangular panel **1**, which comprises the main body of the book stand **100**. The book **15** is supported along its bottom edge by means of a rectangular shelf **3** extending approximately 90° from rectangular panel **1**, and extending the length of the bottom edge of rectangular panel **1**.

A pair of generally vertical support members **4** protrude below the shelf member **3** and support the shelf member **3** in a stable operational configuration. As represented in Figure 3, each support member **4** is preferably configured with a protruding tab **10** that engages with a rectangular notch or groove **6** in the shelf **3** for the purpose of maintaining the book stand **100** in an operational configuration by securing the shelf **3** relative to the two support members **4**. The engagement of tabs **10** with notches/grooves **6** maintains the operative structure of the device, and is furthermore strengthened by the weight of a book. Figure 3 illustrates how the

user may grasp the front portions/extremities **4'** of the support members **4** to pivot the support members **4** either inward (toward the midline of the book stand) to place the extremities **4'** in position to engage with notches/grooves **6**, or to pivot the support members **4** outward (away from the midline) to allow the support members **4** to pivot to the closed position parallel to the panel **1**.

A perspective rear view of the book stand **100** in an operative configuration is shown in Figure 2, wherein support members **4** extend from the back surface **2** of the book stand **100** at slight angles to the back surface **2** and are affixed to the back surface **2** via a pair of flexible hinges **9**. The hinges **9** allow the support members **4** to swing away from surface **2** to a vertical operational configuration. When the support members **4** are pivoted to an operational configuration, the front extremities **4'** of the support members **4** extend underneath the shelf member **3** and are configured to support and interlock with said shelf member **3**. The support members **4** support the weight of the book stand **100** and its contents and are capable of maintaining a heavy book **15** at an inclined angle.

The back surface **2** of the book stand **100** may be formed with a pair of recesses **11** preferably of similar dimensions as the support members **4**. These recesses **11** may be triangular-shaped, curved, L-shaped, or any other shapes that effectively receive the support members **4**. The indented recesses **11** are designed so that when the support members **4** are folded to a closed position, said support members **4** rest completely within the recesses **11**, substantially coplanar and flush with the back surface **2**.

Now referring to Figure 4, a partially closed book stand **100** is depicted wherein the pair of support members **4** are parallel with the front surface **20** of the book stand **100**. Each support member **4** may be configured with a rectangular retaining snap **7** of substantially the same size as the rectangular notch **6**. The two retaining snaps **7** are adapted to engage with said notches **6** that can be formed on the shelf member **3**. When the shelf member **3** is swung towards a closed configuration, the retaining snaps **7** and the notches **6** engage and snap together.

When the book stand **100** is in the closed configuration, as illustrated in Figure 5, the shelf member **3** is closed and coplanar with panel **1**, and is essentially locked into position via the pair of retaining snaps **7** and pair of notches **6**. The shelf member **3** holds the support members **4** in a flat position and the entire embodiment remains in a folded configuration, because the shelf **3** and both support members **4** are restrained from pivoting on their respective axes. In this folded configuration the flexible hinge **5** and also flexible hinges **9**, due to their being integral, flexible portions of the panel **1** and/or shelf **3** material, are

relatively flat and smooth and form a favorable writing surface with optimum aesthetic appeal.

To construct the book stand **100** from its closed configuration back to an open configuration, the shelf member **3** is first disengaged from said retaining snaps **7** and pivoted (Figure 4) perpendicular to surface **20**. The front extremities **4'** of the support members **4** are then rotated inwardly (see Figure 3) in one continuous motion until the tabs **10** engage with the notches **6**. When the notches **6** and tabs **10** are engaged the book stand **100** maintains a sturdy operational configuration as depicted in Figures 1 and 2.

### An Especially Preferred Embodiment

In an especially preferred support system for the book stand **100**, shown to best advantage in Figures 8, 11 and 12, the support members are distanced from each other and slanted, so as to produce a broad, stable base that resists tipping or other movement when torque is applied to one end or another of the book stand **100**. In Figure 8, the shelf member **3** is adjoined to rectangular panel **1** via a horizontal hinge **5**, by which hinge, the shelf member **3** can be swung towards the front surface **20** of rectangular panel **1**, to be at angle **A** relative to panel **1**. Preferably, shelf member **3** is slanted upwards at an angle **B** relative to the plane of the table **T** (and relative to horizontal plane **H** in Figure 8) that allows the shelf to retain the book **15** against the rectangular panel **1** and prevent the book **15** from sliding off the shelf **3**. For example, in the embodiment in Figure 8, the shelf angle **B** is about 45° relative to the plane of the table. Alternatively, the inventor envisions that shelves in the range of about 25-60° relative to the plane of the table **T** will be most effective and convenient. Preferably panel **1** is at an angle of about 40-70° to the plane of the table (angle **C** in Figure 8), so that the book **15** is held in a generally upright position that is comfortable for the reader. Therefore, depending on the angles selected for angles **B** and **C**, the resulting angle **A** would be between about 50-115°, but preferably is in the range of 70 - 110°.

Figures 11 and 12 are rear views of book stand **100**, illustrating how support members **4** preferably diverge from each other on the back surface **2** of the book stand **100** in operational configuration. Preferably, the support members **4** diverge from each other by means of angle **E** being 100-130° and preferably about 110°. The pair of support members **4** are adjoined to the rear surface of the rectangular panel **1** via hinges **9** preferably angled about 5-25° from the edge of the panel **1** (angle **D** in Figures 7 and 12). Preferably, the top ends of the support members **4** are closer to the respective panel **1** edges than the bottom ends of the support members **4**. The hinges **9** are preferably located no more than 2" away from the said panel edge **1** for an 11" long panel **1**. Also, as shown in Figures 11 and 12, the support

members **4** are generally vertical, so that the weight of the book **15** is carried with little or no horizontal force component applied to the support members **4** to pivot the support members **4** out from under the book stand **100**. Positioning both the hinges **9** and the support members **4** away from the book stand **100** midline and close to the panel **1** side edges, distributes the force of a book on the book stand **100** over a greater distance creating a very broad and stable support base.

Optionally, the book stand **100** may also accommodate a clipping device **16** that can be fastened directly to the sketchpad so as to function as a clipboard (see Figure 10). As shown in Figure 10, the book stand **100** may be designed to have holes in the panel **1** for receiving the clipping device legs **17**. These holes could be in a side edge or a top edge of the panel **1** depending on whether the reader wishes to use the book holder as a clipboard or to hold a book **15**. The clip **18** extends over the front surface **20** of the book stand **100** in order to attach to the top of a soft cover book or to retain pages that have a tendency to close.

For ease of transport the present invention may also be configured with holes **8**, depicted in Figure 6, for storage in a ring binder. As illustrated in Figure 9, the book stand **100** may also be configured to accommodate additional adaptations such as a reading light, book magnification device, page retainer, or transparent page protector **13**, which may be connected to the book stand **100** by a hinged bar **14** or other fastener. This hinged bar **14** may, for example, be received in slots provided in the front extremities **4'** of the support members **4**. These or other slots or fasteners may be provided on the front extremities **4'** or on other portions of the stand to receive, for example, a reading light that is non-obstructive to the view of the reader, a reading magnification device such as a thin, flexible lens preferably configured within a structural frame, a cleanable transparent cover to protect the reading material from spills and splattering of liquids and/or for the use with dry-erase markers, and/or a holder for a ruler or straight edge.

Preferably, the panel **1** is unhinged, uncreased, and smooth in surface. Preferably, when the book stand **100** is in the folded configuration, the entire unit is no more than 8-10" x 11 - 12". The components of the book stand **100** can be fabricated by injecting plastic into a mold, stamping rectangular stock, or other methods. While the preferred method of manufacture is to plastics-mold the stand **100**, the book stand **100** also may be made by a two-panel stamping or cutting process, for example, including the following steps:

- provide two flat rectangular panels of the same dimensions;

- on the first (rear) panel: cut the appropriate edges and score the hinges **9** for the support members **4**, score a bottom central portion **21** of the panel between the support



members **4** at line **22** (in this manufacturing method, this portion **21** attach to and pivots with the shelf **3**), and provide snaps **7**;

on the second (front) panel: score the shelf hinge and cut the grooves/notches **6**; and, adhere the two panels together at the appropriate places by adhesive, sonic welding, or other means (the support members **4** are not adhered to the second panel and the shelf **3** is not adhered to the first panel except it may be adhered to the bottom central portion **21** of the first panel which pivots with the shelf **3**).

The tabs **10**, notches/grooves **6**, and snaps **7** may be shapes other than those shown, preferably but not necessarily with tabs **10** extending from an edge surface of extremities **4'** and with snaps **7** extending. Also, other securing systems besides tabs **10** and grooves **6** may be used for securing the support members **4** to the shelf **3** and/or relative to the panel **1**. For example, fasteners, clips, fold-out tabs, or other systems to prevent movement of the support members **4** when in the operative configuration. Likewise, other securing systems besides the snaps **7** and grooves **6** for holding the shelf **3** and the support members **4** in the folded configuration may be used, for example, fasteners, clips, lock and key devices, preferably as long as said securing systems do not significantly protrude beyond the planes of the front and back surfaces so that they do not interfere with use of the book stand **100** in the folded configuration. Note, also, that the two preferred securing systems (for securing the support members **4** in operation configuration and for securing the support members **4**, shelf **3**, and panel **1**, in folded storage configuration) share elements, so that the total number and complexity of elements is minimized. Notches/grooves **6** are common to both securing systems.

While the panel **1** and the shelf are preferably rectangular and the support members **4** are preferably generally triangular, other shapes may be used and the edges of these elements also may be curved or rounded as desired for various aesthetic tastes. The term "support member," therefore, in this Description and in the claims does not limit those members to the particular shape drawn, but may be other legs or extending members within the broad scope of the claims.

Although this invention has been described above with reference to particular means, materials and embodiments, it is to be understood that the invention is not limited to these disclosed particulars, but extends instead to all equivalents within the broad scope of this disclosure and the following claims.